



FCC PART 15B

TEST REPORT

For

Hewlett-Packard Company

1501 Page Mill Road, M/S1419, Palo Alto, CA 94304, United States

FCC ID: B94HHB15C

Report Type: Original Report	Product Type: Tablet
Test Engineer: Leon Chen	leon chen
Report Number: R2DG130719001-00C	
Report Date: 2013-08-31	
Reviewed By: RF Leader	Ivan Cao ivan Cao
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Dongguan) No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China Tel: +86-769-86858888 Fax: +86-769-86858891 www.baclcorp.com.cn

Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. This report **must not** be used by the customer to claim product certification, approval, or endorsement by NVLAP*, or any agency of the Federal Government.

* This report may contain data that are not covered by the NVLAP accreditation and shall be marked with an asterisk "★" (Rev.2). This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

TABLE OF CONTENTS

GENERAL INFORMATION.....	3
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	3
OBJECTIVE	3
RELATED SUBMITTAL(S)/GRANT(S).....	3
TEST FACILITY	3
SYSTEM TEST CONFIGURATION.....	4
JUSTIFICATION	4
EUT EXERCISE SOFTWARE	4
EQUIPMENT MODIFICATIONS	4
SUPPORT EQUIPMENT LIST AND DETAILS	4
EXTERNAL CABLE.....	4
PRINTER	4
KEYBOARD	4
BLOCK DIAGRAM OF TEST SETUP	5
SUMMARY OF TEST RESULTS	6
FCC §15.107 – AC LINE CONDUCTED EMISSIONS.....	7
MEASUREMENT UNCERTAINTY	7
EUT SETUP	7
EMI TEST RECEIVER SETUP.....	8
TEST PROCEDURE	8
CORRECTED AMPLITUDE & MARGIN CALCULATION	8
TEST EQUIPMENT LIST AND DETAILS.....	9
TEST RESULTS SUMMARY	9
TEST DATA	9
FCC §15.109 - RADIATED EMISSIONS	14
MEASUREMENT UNCERTAINTY	14
EUT SETUP	14
EMI TEST RECEIVER SETUP.....	15
TEST PROCEDURE	15
CORRECTED AMPLITUDE & MARGIN CALCULATION	15
TEST EQUIPMENT LIST AND DETAILS.....	16
TEST RESULTS SUMMARY	16
TEST DATA	16

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Hewlett-Packard Company*'s product, model number: *HSTNH-B15C (FCC ID: B94HHB15C)* (the "EUT") in this report was a *Tablet*, which was measured approximately: 26.5 cm (L) x 17.5 cm (W) x 1.5 cm (H), rated input voltage: DC 3.7V from lithium battery or DC 5V from adapter.

Adapter Information: HP
MODEL: ADS-12B-06 05010G
INPUT: 100-240Vac, 50/60Hz, 0.3A Max
OUTPUT: 5.0V, 2.0A

** All measurement and test data in this report was gathered from production sample serial number: 130719001 (Assigned by BACL.Dongguan). The EUT was received on 2013-07-29.*

Objective

This report is prepared on behalf of *Hewlett-Packard Company* in accordance with Part 2, Subpart J, Part 15, Subparts A and B of the Federal Communication Commissions rules.

The objective of the manufacturer is to determine compliance with FCC Part 15B, Class B.

Related Submittal(s)/Grant(s)

FCC Part 15C DTS submissions with FCC ID: *B94HHB15C* for Wifi.
FCC Part 15C DSS submissions with FCC ID: *B94HHB15C* for Bluetooth.
FCC Part 22H&24E PCT submissions with FCC ID: *B94HHB15C*.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China

Test site at Bay Area Compliance Laboratories Corp. (Dongguan) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 02, 2012. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 273710. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Laboratories Corp. (Dongguan) is an ISO/IEC 17025 accredited laboratory, and is accredited by National Voluntary Laboratory Accredited Program (Lab Code 500069-0).



The current scope of accreditations can be found at <http://ts.nist.gov/standards/scopes/5000690.htm>

SYSTEM TEST CONFIGURATION

Justification

The system was configured for testing in a typical fashion (as normally used by a typical user). The highest operating frequency is 1200 MHz.

Test mode 1: USB Downloading

Test mode 2: HDMI Playing

EUT Exercise Software

No software was used.

Equipment Modifications

No modification was made to the EUT.

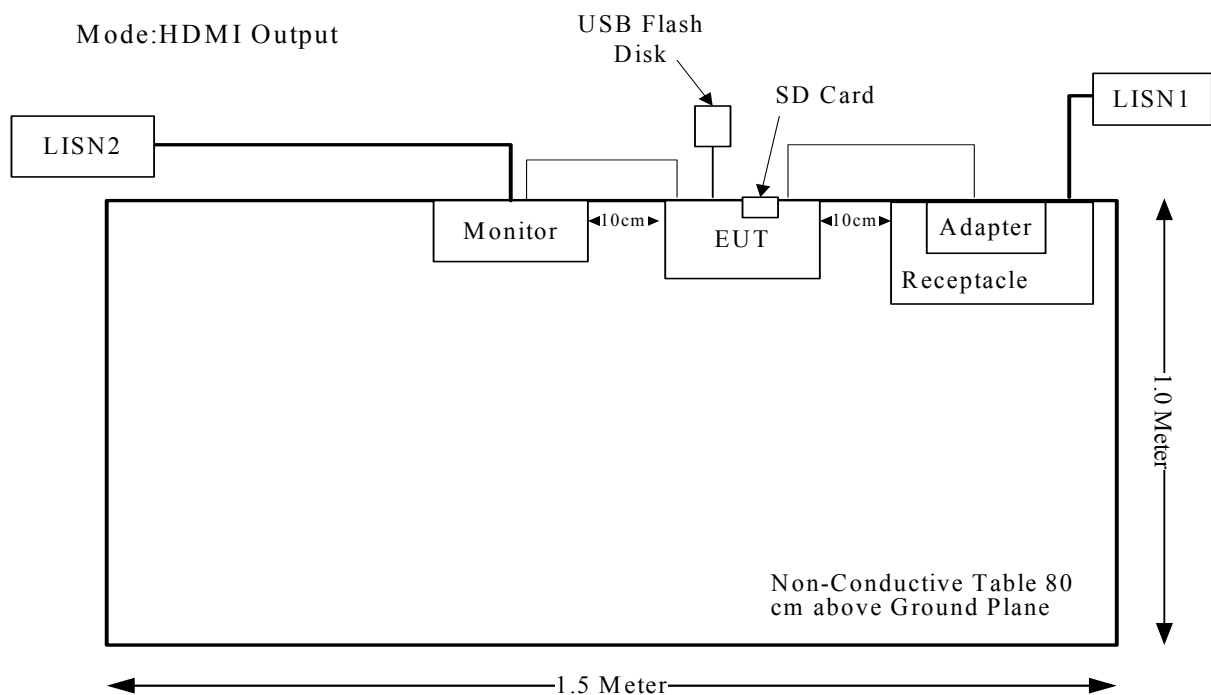
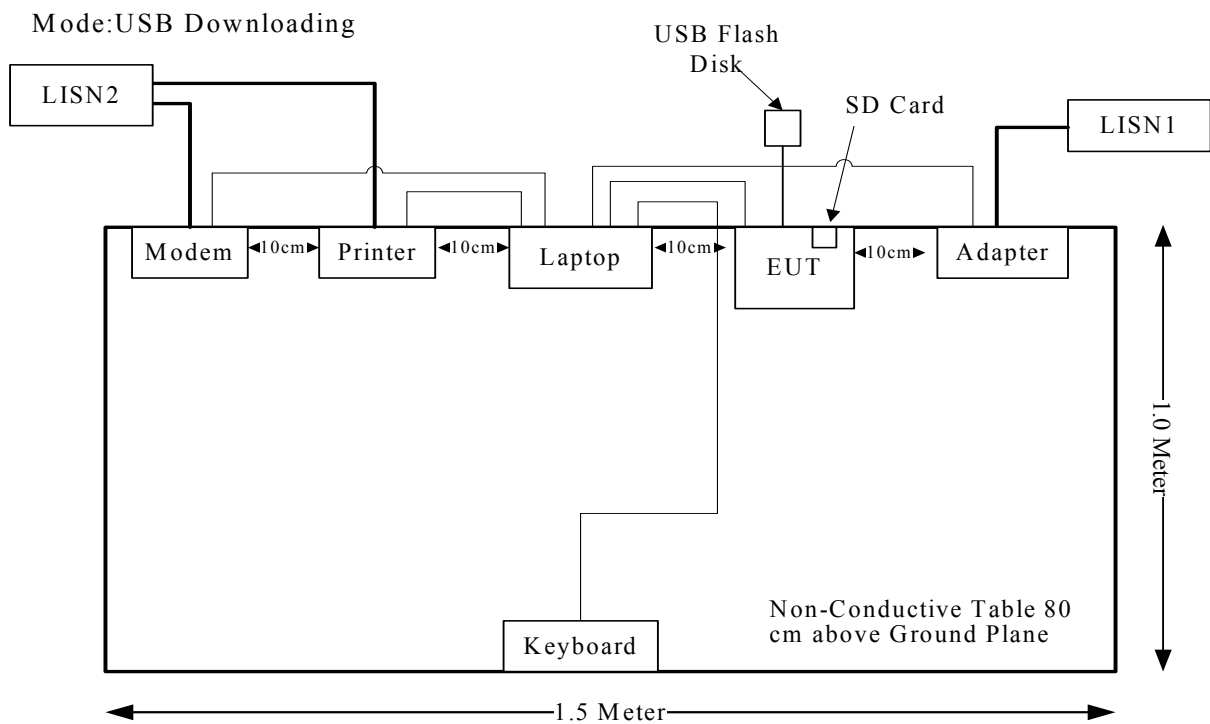
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
HP	Printer	C3941A	JPTVOB2337
SAST	Modem	AEM-2100	0293
DELL	Keyboard	L100	CNORH656658907BL05DC
DELL	Laptop	PP11L	N/A
DELL	Monitor	U3011t	CN-OPH5NY-74445-16T-290L
Kinston	Micro SD Card	4G	N/A
Kinston	USB Flash Disk	CZ50	N/A

External Cable

Cable Description	Length (m)	From Port	To
Shielded Detachable Printer Cable	1.2	Parallel Port of Laptop	Printer
Shielded Detachable Serial Cable	1.2	Serial Port of Laptop	Modem
Shielded Detachable Keyboard Cable	1.5	Keyboard Port of Laptop	Keyboard
Shielded Detachable HDMI Cable	1.5	LCD Monitor	EUT
Un-shielded Detachable DC Cable	1.4	Adapter	EUT
Shielded Detachable OGT Cable	0.1	EUT	Flash Disk
Shielded Detachable USB Cable	1.0	EUT	Laptop

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Results
§15.107	AC Line Conducted Emissions	Compliance
§15.109	Radiated Emissions	Compliance

FCC §15.107 – AC LINE CONDUCTED EMISSIONS

Measurement Uncertainty

Compliance or non-compliance with a disturbance limit shall be determined in the following manner:

If U_{lab} is less than or equal to U_{cisp} of Table 1, then:

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

If U_{lab} is greater than U_{cisp} of Table 1, then:

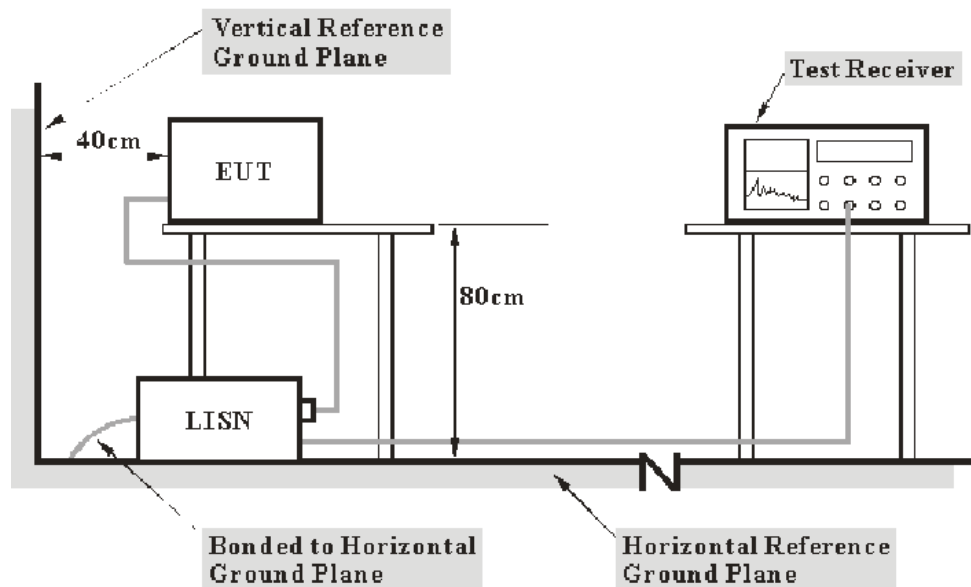
- compliance is deemed to occur if no measured disturbance level, increased by $(U_{lab} - U_{cisp})$, exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level, increased by $(U_{lab} - U_{cisp})$, exceeds the disturbance limit.

Based on CISPR 16-4-2: 2011, measurement uncertainty of conducted disturbance at mains port using AMN at Bay Area Compliance Laboratories Corp. (Dongguan) is 3.46 dB (150 kHz to 30 MHz).

Table 1 – Values of U_{cisp}

Measurement	U_{cisp}
Conducted disturbance at mains port using AMN (150 kHz to 30 MHz)	3.4 dB

EUT Setup



- Note: 1. Support units were connected to second LISN.
 2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC Part 15.107 Class B limits.

The adapter was connected to a 120 VAC/60 Hz power source.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

Test Procedure

During the conducted emission test, the adapter was connected to the outlet of the first LISN and the other support equipments were connected to the outlet of the second LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

$$V_C = V_R + A_C + VDF$$

$$C_f = A_C + VDF$$

Herein,

V_C (cord. Reading): corrected voltage amplitude

V_R : reading voltage amplitude

A_C : attenuation caused by cable loss

VDF: voltage division factor of AMN

C_f : Correction Factor

The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of 7dB means the emission is 7dB below the maximum limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI TEST RECIEVER	ESCS 30	830245/006	2013-1-10	2014-1-9
R&S	L.I.S.N	ESH3-Z5	843331/015	2012-9-17	2013-9-16
R&S	L.I.S.N	ESH3-Z5	100113	2012-11-29	2013-11-28
BACL	Test Software	BACL-EMC	V1.0-2010	N/A	N/A

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to National Primary Standards and International System of Units (SI).

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15.107, with the worst margin reading of:

5.76 dB at 0.440 MHz in the **Neutral** conducted mode of USB downloading

Test Data**Environmental Conditions**

Temperature:	27.5 °C
Relative Humidity:	63 %
ATM Pressure:	100 kPa

The testing was performed by Leon Chen on 2013-07-31.

Test mode: USB Downloading

120 V, 60 Hz, Line:



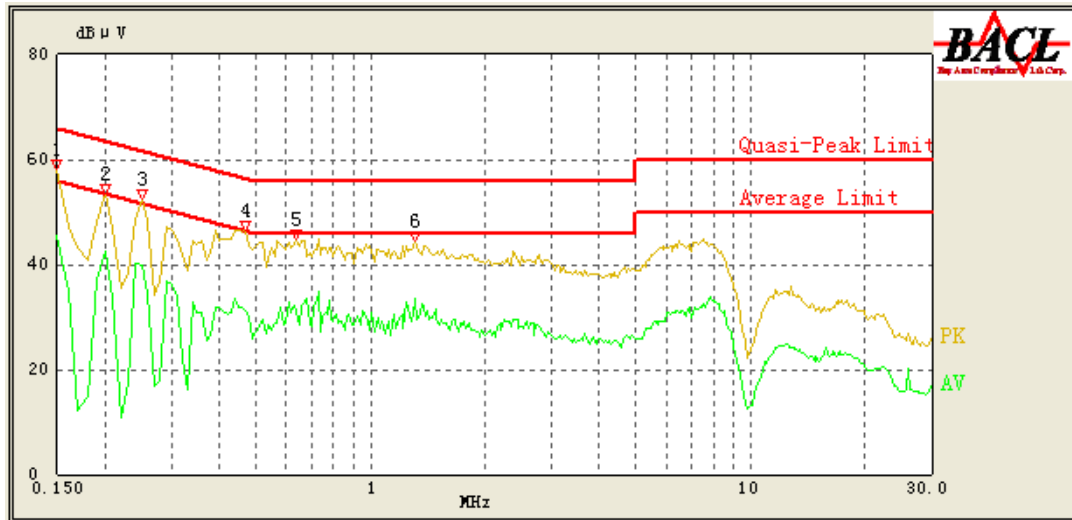
Frequency (MHz)	Cord. Reading (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/AV/QP)
0.160	41.43	0.46	65.46	24.03	QP
0.160	25.48	0.46	55.46	29.98	AV
0.220	41.97	0.41	62.82	20.85	QP
0.220	35.14	0.41	52.82	17.68	AV
0.300	42.91	0.34	60.24	17.33	QP
0.300	26.66	0.34	50.24	23.58	AV
0.440	45.64	0.32	57.06	11.42	QP
0.440	36.51	0.32	47.06	10.55	AV
0.770	34.55	0.32	56.00	21.45	QP
0.770	32.05	0.32	46.00	13.95	AV
1.530	37.76	0.34	56.00	18.24	QP
1.530	29.58	0.34	46.00	16.42	AV

120 V, 60 Hz, Neutral:

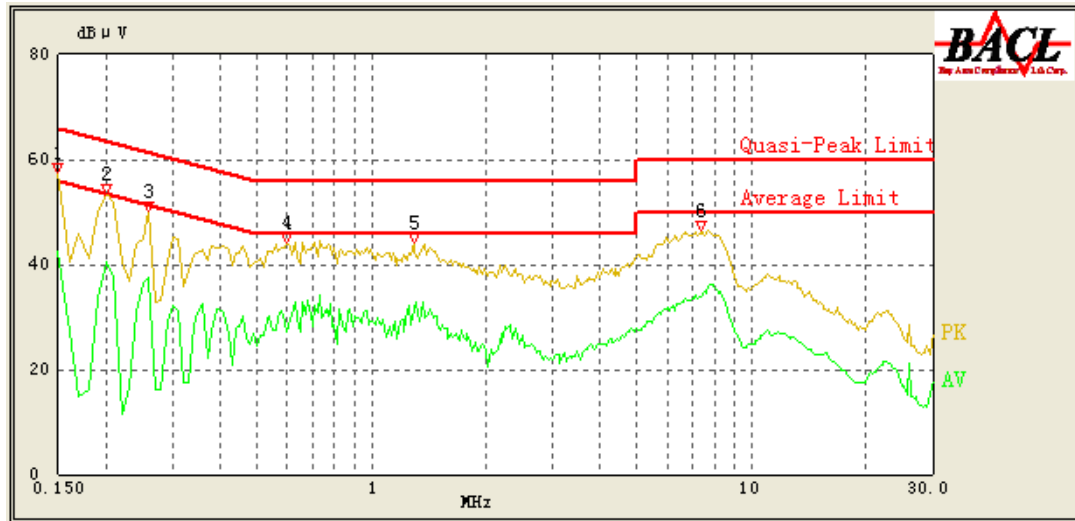
Frequency (MHz)	Cord. Reading (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/AV/QP)
0.150	46.30	0.26	66.00	19.70	QP
0.150	25.99	0.26	56.00	30.01	AV
0.180	45.82	0.25	64.49	18.67	QP
0.180	32.27	0.25	54.49	22.22	AV
0.250	43.72	0.24	61.76	18.04	QP
0.250	33.68	0.24	51.76	18.08	AV
0.440	42.30	0.22	57.06	14.76	QP
0.440	41.30	0.22	47.06	5.76	AV
0.500	36.82	0.21	56.00	19.18	QP
0.500	33.62	0.21	46.00	12.38	AV
1.710	32.11	0.26	56.00	23.89	QP
1.710	31.65	0.26	46.00	14.35	AV

Test mode: HDMI Playing

120 V, 60 Hz, Line:



Frequency (MHz)	Cord. Reading (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/AV/QP)
0.150	55.28	0.47	66.00	10.72	QP
0.150	45.34	0.47	56.00	10.66	AV
0.200	51.00	0.43	63.61	12.61	QP
0.200	42.39	0.43	53.61	11.22	AV
0.250	49.23	0.38	61.76	12.53	QP
0.250	39.99	0.38	51.76	11.77	AV
0.470	43.22	0.31	56.51	13.29	QP
0.470	31.20	0.31	46.51	15.31	AV
0.640	41.15	0.31	56.00	14.85	QP
0.640	31.31	0.31	46.00	14.69	AV
1.310	40.60	0.33	56.00	15.40	QP
1.310	33.44	0.33	46.00	12.56	AV

120 V, 60 Hz, Neutral:

Frequency (MHz)	Cord. Reading (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/AV/QP)
0.150	54.87	0.26	66.00	11.13	QP
0.150	42.40	0.26	56.00	13.60	AV
0.200	50.04	0.25	63.61	13.57	QP
0.200	40.60	0.25	53.61	13.01	AV
0.260	46.51	0.24	61.43	14.92	QP
0.260	37.46	0.24	51.43	13.97	AV
0.600	40.75	0.21	56.00	15.25	QP
0.600	27.24	0.21	46.00	18.76	AV
1.290	39.24	0.24	56.00	16.76	QP
1.290	31.41	0.24	46.00	14.59	AV
7.380	41.16	0.58	60.00	18.84	QP
7.460	34.05	0.59	50.00	15.95	AV

FCC §15.109 - RADIATED EMISSIONS

Measurement Uncertainty

Compliance or non-compliance with a disturbance limit shall be determined in the following manner:

If U_{lab} is less than or equal to U_{cisp} of Table 2, then:

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

If U_{lab} is greater than U_{cisp} of Table 1, then:

- compliance is deemed to occur if no measured disturbance level, increased by $(U_{lab} - U_{cisp})$, exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level, increased by $(U_{lab} - U_{cisp})$, exceeds the disturbance limit.

Based on CISPR 16-4-2: 2011, measurement uncertainty of radiated emission at a distance of 3m at Bay Area Compliance Laboratories Corp. (Dongguan) is:

30M~200MHz: 5.0 dB

200M~1GHz: 6.2 dB

1G~6GHz: 4.45 dB

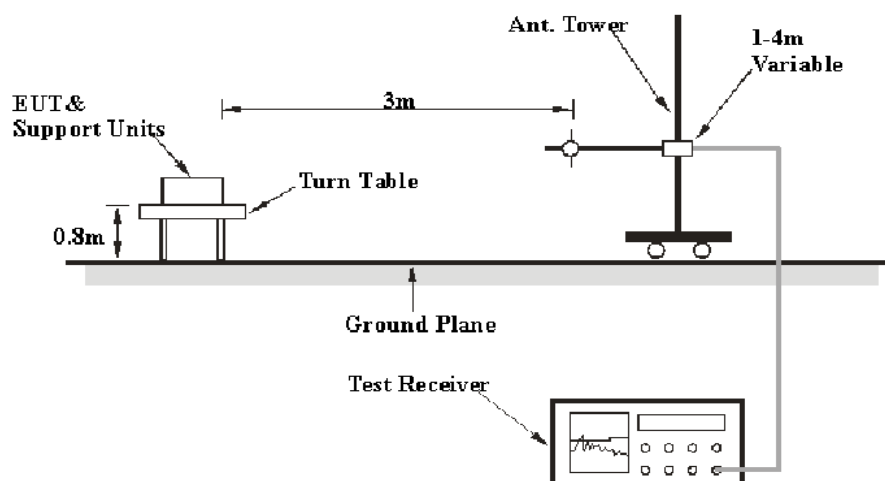
6G~18GHz: 5.23 dB

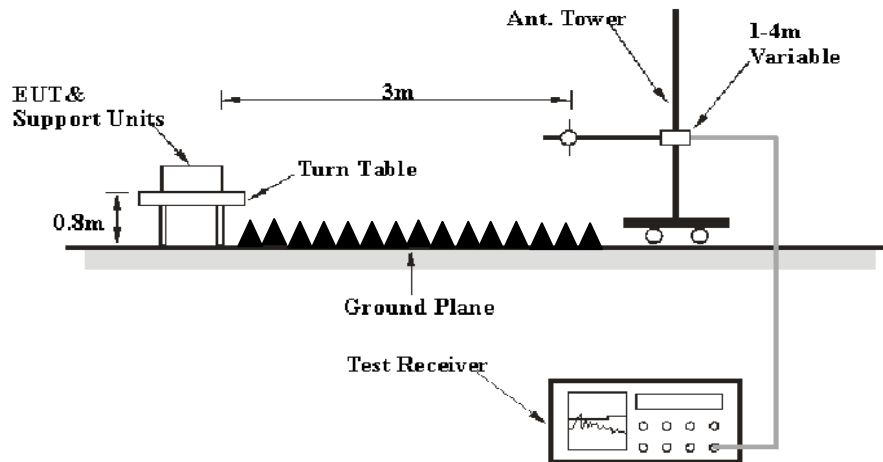
Table 2 – Values of U_{cisp}

Measurement	U_{cisp}
Radiated disturbance (electric field strength at an OATS or in a SAC) (30 MHz to 1000 MHz)	6.3 dB
Radiated disturbance (electric field strength in a FAR) (1 GHz to 6 GHz)	5.2 dB
Radiated disturbance (electric field strength in a FAR) (6 GHz to 18 GHz)	5.5 dB

EUT Setup

Below 1 GHz:



Above 1GHz:

The radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.4-2003. The specification used was the FCC Part 15.109, Class B limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The adapter connected to a 120 VAC/60 Hz power source.

EMI Test Receiver Setup

According to FCC 15.33 requirements, the system was measured from 30 MHz to 6 GHz.

During the radiated emission test, the EMI test receiver was set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Detector
30MHz – 1000 MHz	120 kHz	300 kHz	120kHz	QP
Above 1 GHz	1MHz	3 MHz	/	PK
	1MHz	10 Hz	/	Ave.

Test Procedure

For the radiated emissions test, the adapter was connected to the first AC floor outlet and the other support equipments were connected to the second AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

The data was recorded in Quasi-peak detection mode for 30 MHz to 1 GHz, Peak and average detection mode above 1 GHz.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Loss and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Loss} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI TEST RECEIVER	ESCI	100224	2013-5-6	2014-5-5
Sunol Sciences	Antenna	JB3	A060611-1	2012-9-6	2015-9-5
HP	HP AMPLIFIER	8447E	2434A02181	N/A	N/A
R&S	Spectrum analyzer	FSEM 30	849016/001	2012-9-4	2013-9-3
ETS LINDGREN	horn antenna	3115	000 527 35	2012-9-6	2015-9-5
Mini-Circuit	Amplifier	ZVA-213-S+	54201245	N/A	N/A
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to National Primary Standards and International System of Units (SI).

Test Results Summary

According to the data in the following table, the EUT complied with the FCC §15.109, Class B, with the worst margin reading of:

4.20 dB at 335.5500 MHz in the **Horizontal** polarization of USB Downloading

Test Data

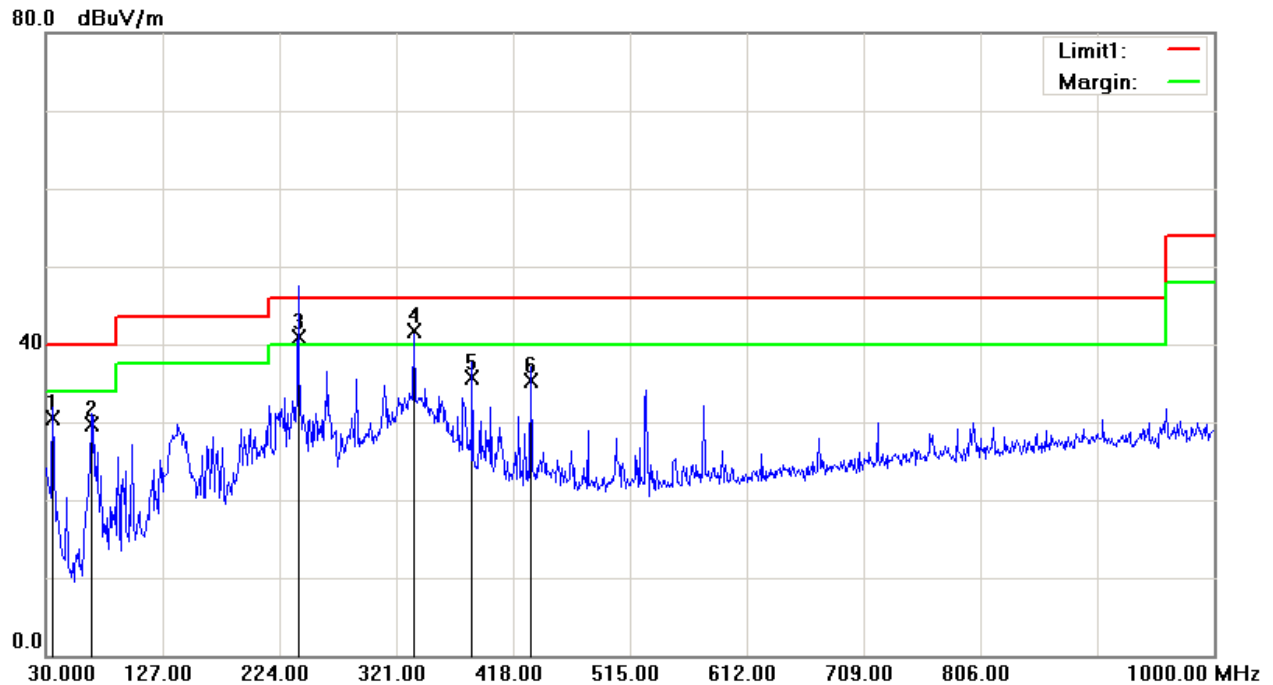
Environmental Conditions

Temperature:	26.6 °C
Relative Humidity:	64 %
ATM Pressure:	99.4 kPa

The testing was performed by Leon Chen on 2013-08-27.

1) Below 1 GHz:

Test mode: USB Downloading

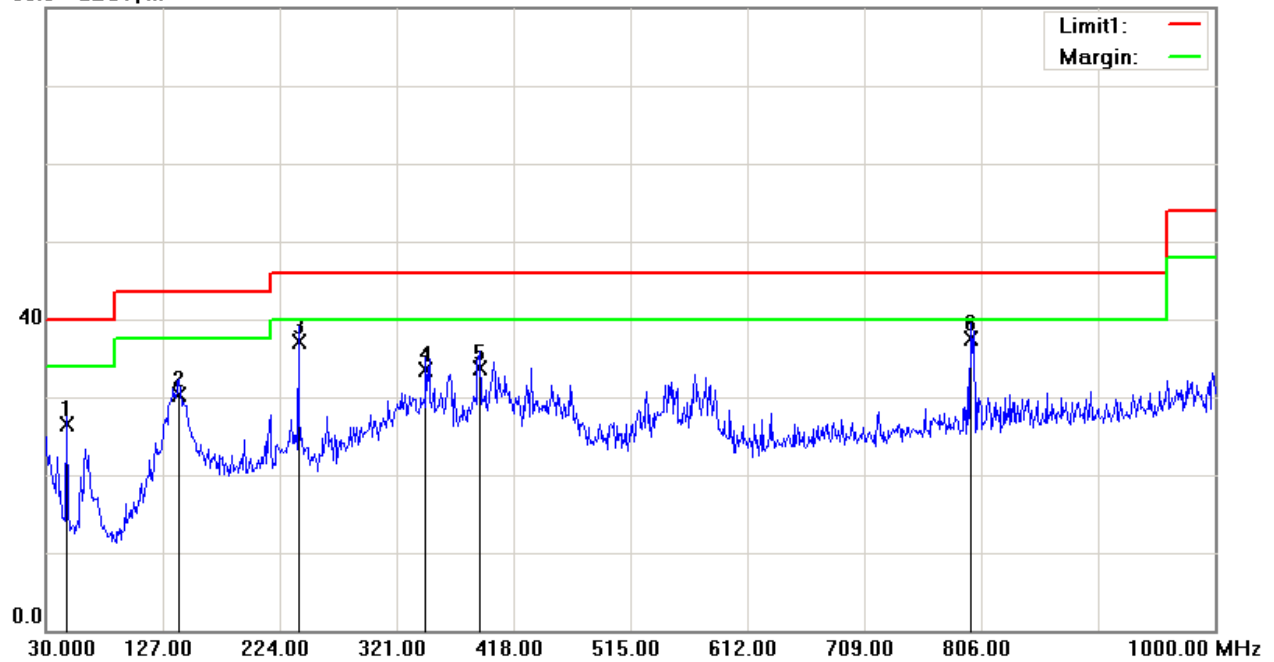
Horizontal:

Frequency (MHz)	Receiver Reading (dBuV/m)	Detector (PK/QP/Ave)	Correction Factor (dB)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
35.8200	33.47	QP	-2.97	30.50	40.00	9.50
67.8300	41.87	QP	-12.07	29.80	40.00	10.20
239.5200	48.60	QP	-7.60	41.00	46.00	5.00*
335.5500	46.61	QP	-4.81	41.80	46.00	4.20*
384.0500	39.45	QP	-3.65	35.80	46.00	10.20
432.5500	38.03	QP	-2.63	35.40	46.00	10.60

*Within measurement uncertainty!

Vertical:

80.0 dBuV/m

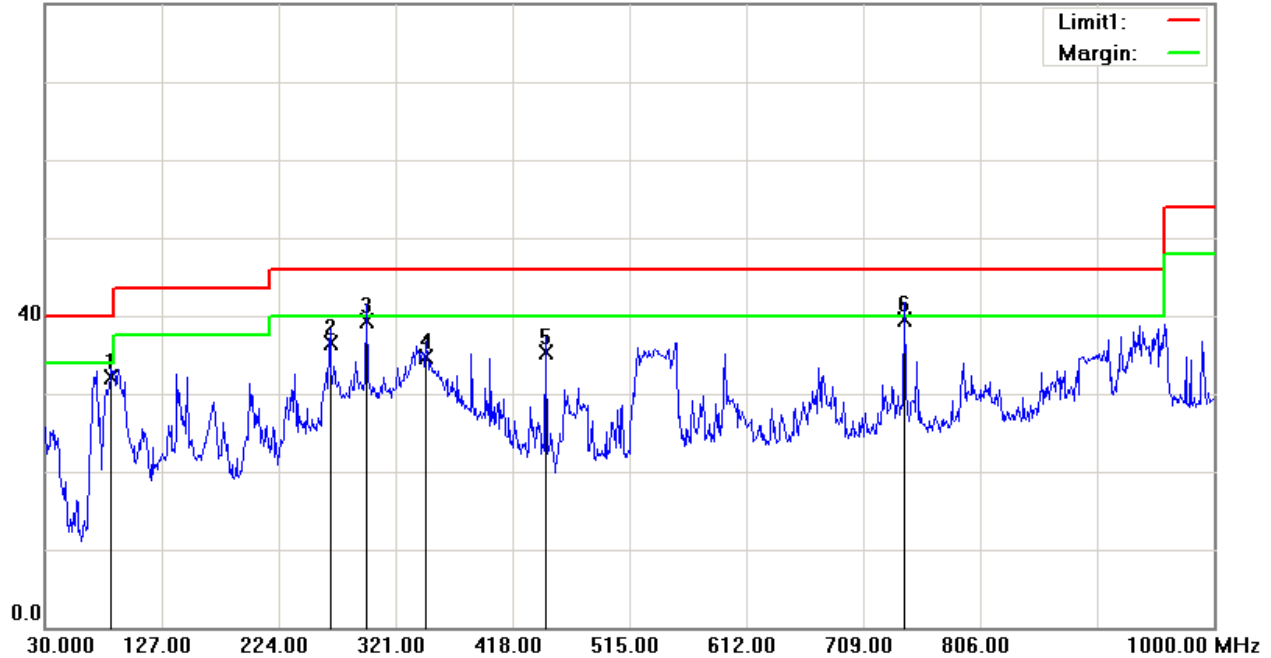


Frequency (MHz)	Receiver Reading (dBuV/m)	Detector (PK/QP/Ave)	Correction Factor (dB)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
47.4600	37.22	QP	-10.72	26.50	40.00	13.50
140.5800	37.12	QP	-6.82	30.30	43.50	13.20
239.5200	44.80	QP	-7.60	37.20	46.00	8.80
345.2500	38.19	QP	-4.59	33.60	46.00	12.40
389.8700	37.38	QP	-3.58	33.80	46.00	12.20
797.2700	34.76	QP	2.74	37.50	46.00	8.50

Test mode: HDMI Playing

Horizontal:

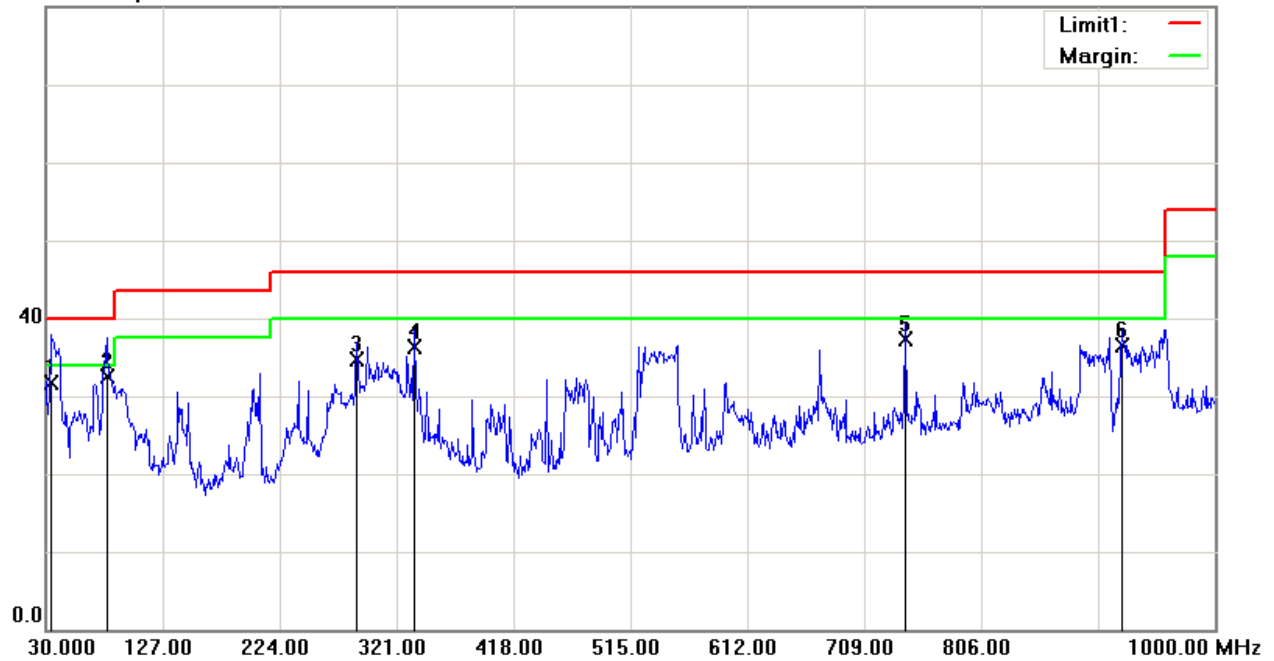
80.0 dBuV/m



Frequency (MHz)	Receiver Reading (dBuV/m)	Detector (PK/QP/Ave)	Correction Factor (dB)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
85.2900	44.75	QP	-12.55	32.20	40.00	7.80
266.6800	42.66	QP	-6.16	36.50	46.00	9.50
296.7500	45.00	QP	-5.60	39.40	46.00	6.60
346.2200	39.24	QP	-4.54	34.70	46.00	11.30
445.1600	37.74	QP	-2.44	35.30	46.00	10.70
742.9500	37.55	QP	2.05	39.60	46.00	6.40

Vertical:

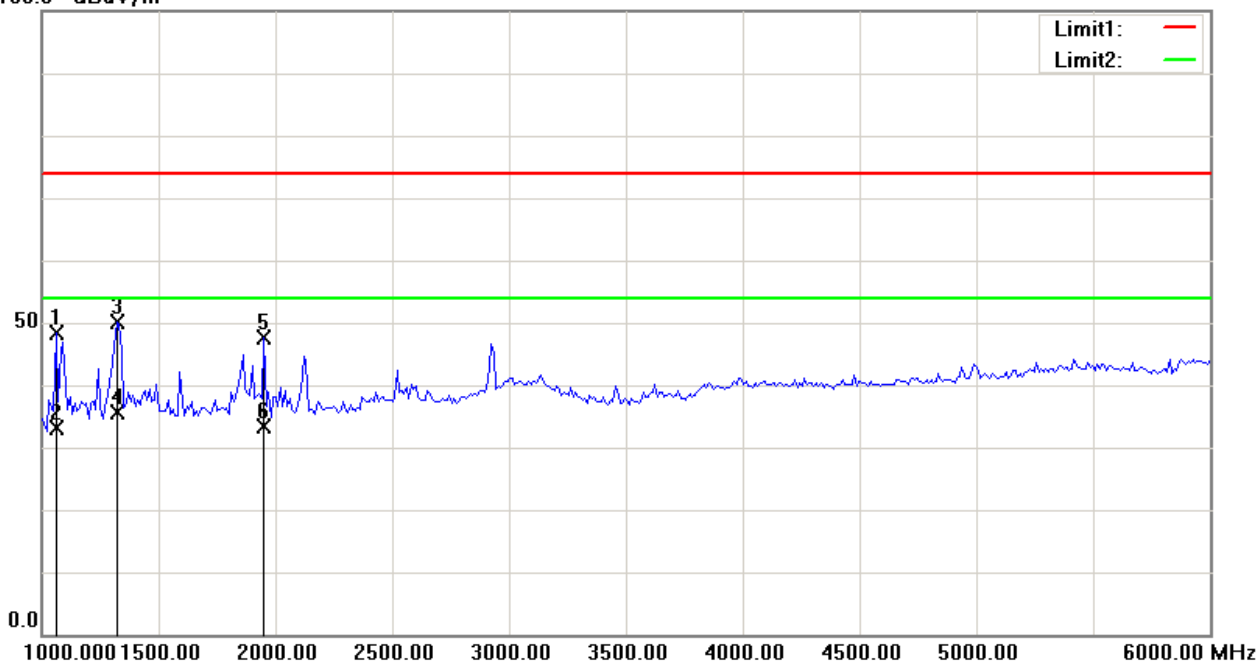
80.0 dBuV/m



Frequency (MHz)	Receiver Reading (dBuV/m)	Detector (PK/QP/Ave)	Correction Factor (dB)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
34.8500	33.83	QP	-2.13	31.70	40.00	8.30
80.4400	44.75	QP	-12.25	32.50	40.00	7.50
288.0200	40.50	QP	-5.70	34.80	46.00	11.20
335.5500	41.21	QP	-4.81	36.40	46.00	9.60
742.9500	35.25	QP	2.05	37.30	46.00	8.70
922.4000	32.27	QP	4.23	36.50	46.00	9.50

2) Above 1 GHz:*Test mode: USB Downloading***Horizontal:**

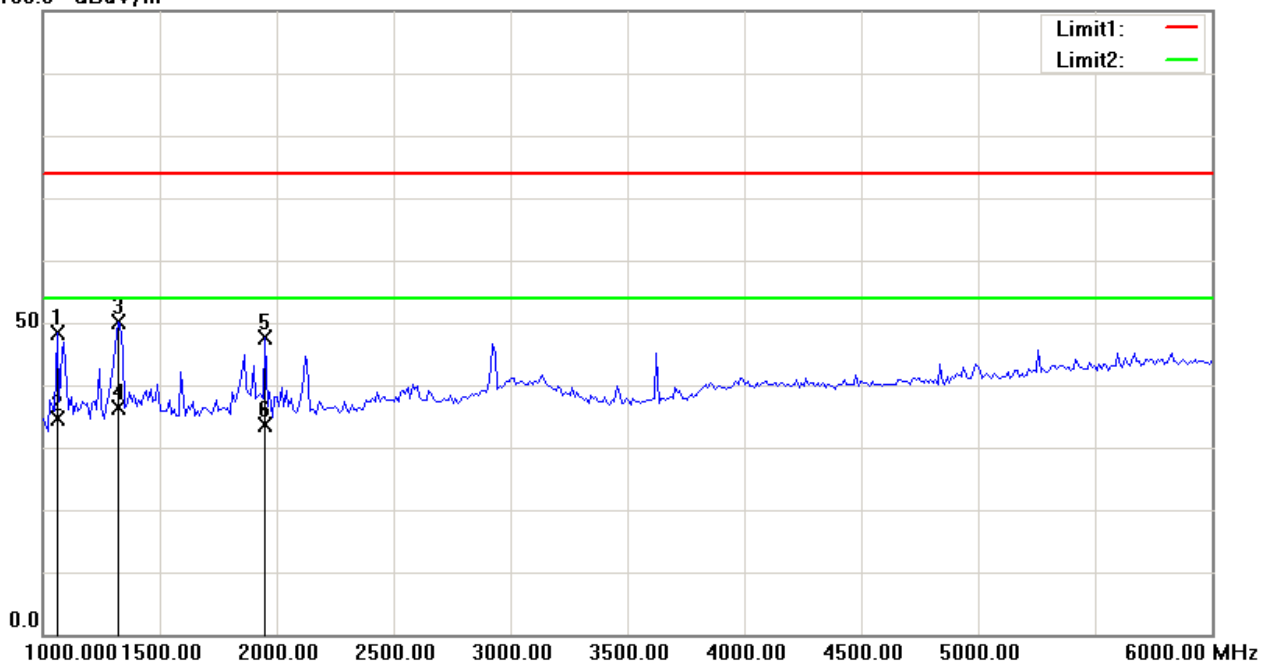
100.0 dBuV/m



Frequency (MHz)	Receiver Reading (dBuV/m)	Detector (PK/QP/Ave)	Correction Factor (dB)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1060.120	50.37	peak	-2.09	48.28	74.00	25.72
1060.120	35.34	AVG	-2.09	33.25	54.00	20.75
1320.641	51.23	peak	-1.10	50.13	74.00	23.87
1320.641	36.63	AVG	-1.10	35.53	54.00	18.47
1951.904	46.53	peak	1.19	47.72	74.00	26.28
1951.904	32.30	AVG	1.19	33.49	54.00	20.51

Vertical:

100.0 dBuV/m

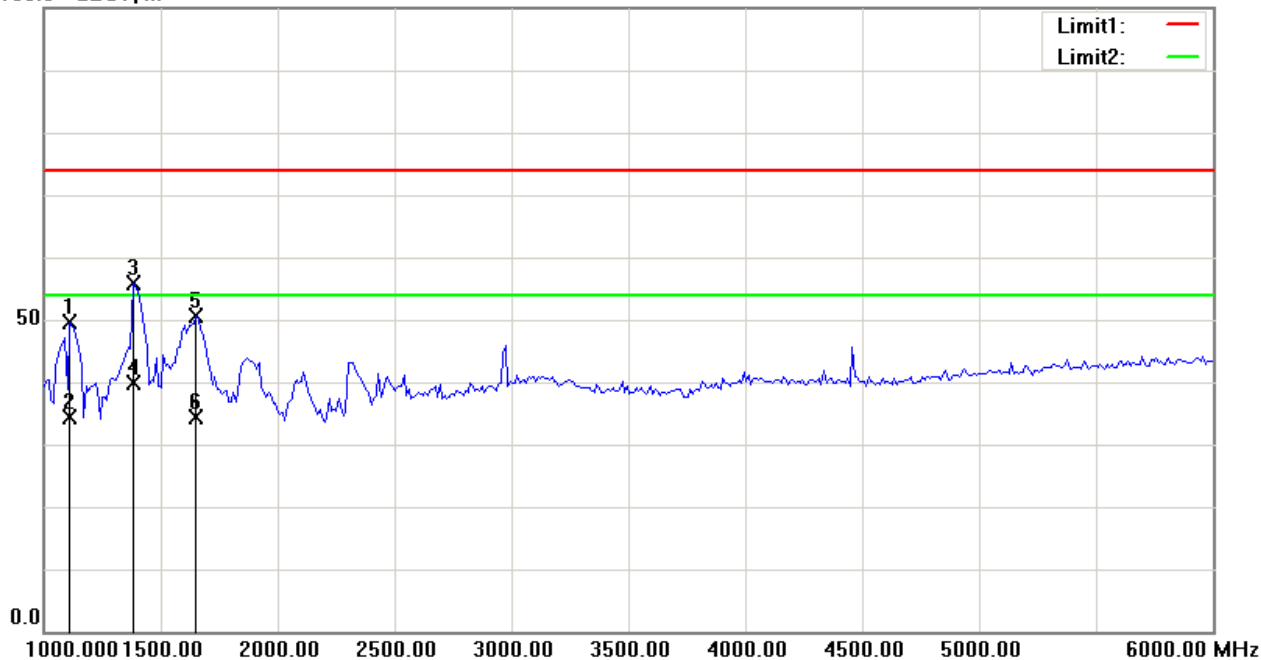


Frequency (MHz)	Receiver Reading (dBuV/m)	Detector (PK/QP/Ave)	Correction Factor (dB)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1060.120	50.37	peak	-2.09	48.28	74.00	25.72
1060.120	36.64	AVG	-2.09	34.55	54.00	19.45
1320.641	51.23	peak	-1.10	50.13	74.00	23.87
1320.641	37.39	AVG	-1.10	36.29	54.00	17.71
1951.904	46.53	peak	1.19	47.72	74.00	26.28
1951.904	32.48	AVG	1.19	33.67	54.00	20.33

Test mode: HDMI Playing

Horizontal:

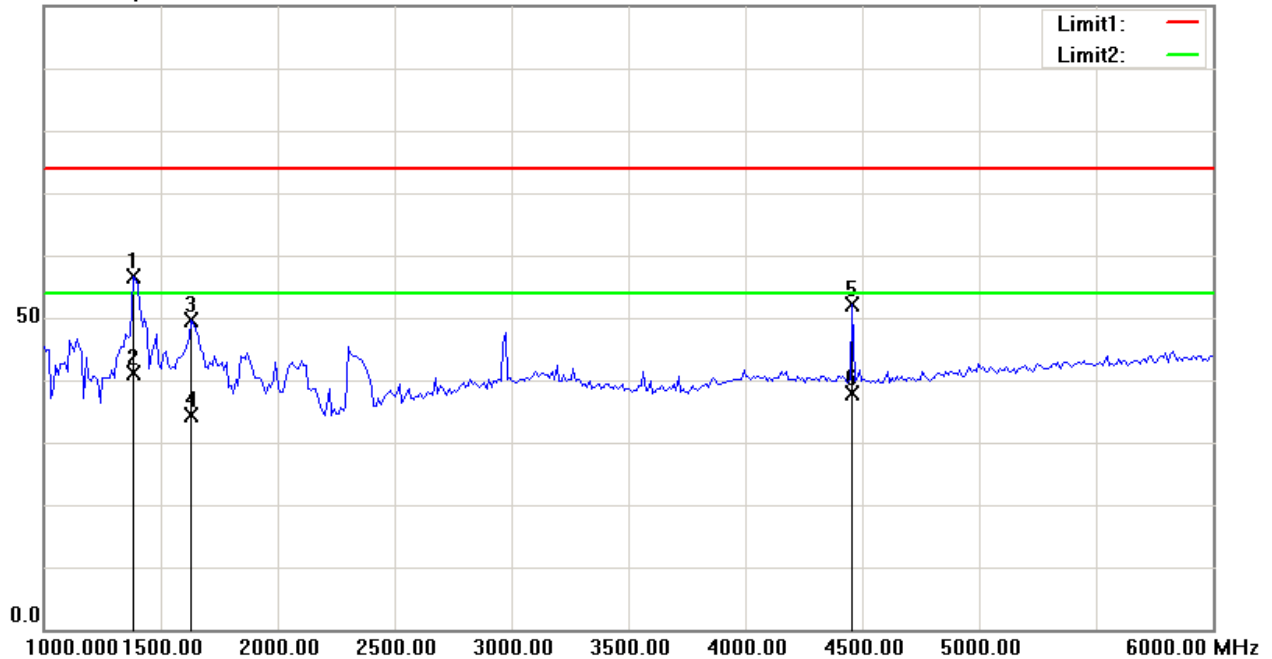
100.0 dBuV/m



Frequency (MHz)	Receiver Reading (dBuV/m)	Detector (PK/QP/Ave)	Correction Factor (dB)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1110.220	51.59	peak	-1.92	49.67	74.00	24.33
1110.220	36.23	AVG	-1.92	34.31	54.00	19.69
1380.762	56.56	peak	-0.79	55.77	74.00	18.23
1380.762	40.61	AVG	-0.79	39.82	54.00	14.18
1651.303	50.24	peak	0.38	50.62	74.00	23.38
1651.303	33.97	AVG	0.38	34.35	54.00	19.65

Vertical:

100.0 dBuV/m



Frequency (MHz)	Receiver Reading (dBuV/m)	Detector (PK/QP/Ave)	Correction Factor (dB)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1380.762	57.31	peak	-0.79	56.52	74.00	17.48
1380.762	42.02	AVG	-0.79	41.23	54.00	12.77
1631.263	49.25	peak	0.28	49.53	74.00	24.47
1631.263	34.08	AVG	0.28	34.36	54.00	19.64
4456.914	44.15	peak	8.00	52.15	74.00	21.85
4456.914	29.81	AVG	8.00	37.81	54.00	16.19

***** END OF REPORT *****